

# **The Depopulation of Rural Areas and the Farming System**

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# The depopulation of rural areas and the farming system

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## Abstract

**Depopulation of rural areas can entail negative externalities. This paper examines, inter alia, the influence of the farming system on depopulation processes. The population change in rural communities in Switzerland (family-based farming system) and in the German Land Mecklenburg-Western Pomerania (fordistic farming system) is explained through regression analysis by the proportion of persons occupied in the three economic sectors and by other variables. In Switzerland, a high proportion of locals occupied in farming affects population dynamics positively; in Mecklenburg-Western Pomerania, the situation is exactly opposite. This can serve as an argument to support small and networked farms in rural problem regions.**

## 1. Is depopulation a problem?

Since TIEBOUT (1956) has introduced a model about migration which, from today's perspective, seems naive, the question whether migration processes cause problems has been answered to a considerable degree. Tiebout started with the young definition of public goods by Samuelson (1954). The latter had just shown that public goods like public security or clean air can only be provided by a central government. Tiebout argued, however, public goods that were local, like trailing paths or village fairs, would make a difference. For such local public goods, supply and demand (via migration to municipalities with low taxes or with a better supply of public goods) interact in a way that enables an effective competition between municipalities, creating a market for local public goods.

This would, theoretically, mean that municipalities should compete against each other whilst the central government should remain passive. During the following decades, many authors (BUCHANAN und GOETZ, 1972; BOADWAY und FLATTERS, 1982; STAHL und VARAYIA, 1983; STIGLITZ, 1983) concentrated on the efficiency of interregional redistribution by a central government. The arguments in favor of transfers from rich to poor regions by a central government differed depending on model assumptions, but it became soon clear, that migration decisions from sparsely populated areas may well entail negative externalities. Schön (1997; 43) summarizes that there may be a market failure of resource allocation under spatial aspects. Hence, this rebuts Tiebout and shows that a support for communities which were not competitive in attracting immigration may be an efficient solution.

These results could be confirmed by empirical results during recent decades, when rapid depopulation of rural regions could be observed in Spain (Cena and Fernandez-Cavada, 1986) or Russia (BONDARENKO, 1999; KONTOROVICH, 2000; SAVCHENKO, 2001) and important components of the local infrastructure could not be maintained any more. As early as 1972, Buchanan and Goetz talk about an "undue concentration of persons in the large and growing conurbations".

In this paper, two Middle European Regions in which depopulation processes occur to a different degree (and presumably with different causes) are compared. Switzerland and the North-Eastern German Land of Mecklenburg-Western Pomerania may have a similar size (41 000 vs. 23 000 square kilometres), but the population structure is very different, indeed. Due to the topographic heterogeneity of Switzerland, their 7.2 Mill. inhabitants are extremely unevenly distributed between the urban regions of the North and the West and the Southern mountain regions, whereas the 1.75 inhabitants of Mecklenburg Western Pomerania dwell much more uniformly on the whole region.

For Switzerland as a whole, depopulation is not a problem. Not only has the country's population risen through immigration and birth surplus during recent decades. Also municipalities with a population density below 150 p./km<sup>2</sup> which may be called rural have in three quarters of cases seen a rise in population between 1990 and 2000, not a decline. In these cases, land-loss through urbanisation seems to be a greater problem than depopulation. However, on a local level there are cases where depopulation occurs and jeopardises the sustainability of villages (Rieder, 2003).

For Mecklenburg-Western Pomerania, depopulation is not a local problem but a general one. Since reunification in 1990, population figures have declined by 150,000, caused both by a historically low birth rate and by massive outmigration. The cities of the region, which have partly lost more than 20 per cent of their population since 1990, but also peripheral regions are particularly concerned. On the other hand, commuter belts have gained inhabitants. Hence, migration movements from the cores of cities to their fringe as well as depopulation of peripheral regions can be characterized as the most significant population developments of this Land. A soon turnaround of this development can not be expected.

As our particular interest focuses on the role of agriculture in depopulation processes, their difference is described in Section 2. We find the term of an agricultural system useful for this purpose. In Section 3, a hypothesis of the role of the agricultural system in depopulation processes is developed. In order to test this hypothesis, an empirical study is carried out. The methodology is described in Section 4, results in Section 5. Implications for the significance of agricultural structures are outlined in Section 6.

## **2. Agricultural systems in Switzerland and in Mecklenburg-Western Pomerania**

It is not only the structure of demographic problems which distinguishes the two regions. The agricultural structure of both regions is also fundamentally different, which can be made clear with help of a few figures. The average farm in Mecklenburg-Western Pomerania has a size of 269 hectares (Land Mecklenburg-Vorpommern, 2003), the average Swiss farm of 16 hectares (Schweizerischer Bauernverband, 2003). More than the half of Swiss pig holdings still keeps below 50 animals, whereas farms with 10 000 pigs are no exception in Mecklenburg-Western Pomerania; the largest pig holding has even 40 000 animals. More than half of the farmland of Mecklenburg-Western Pomerania today is used by legal persons, while the family farm is almost the only existent legal form for Swiss farms.

The different structures are certainly partly due to different topographic conditions. But the main cause is a historical one. Since many centuries, the agricultural structure of Mecklenburg-Western Pomerania is dominated by large manors. From a cultural point of view, this simplified the process of industrialisation of agriculture which was propagated and realised in the German Democratic Republic (GDR). A new production model arose that was characterised by a large-scale production of standardised goods on the one hand, by new social duties of the farm cooperatives like providing housing or childcare on the other. This "unity of economic and social policy", a core policy element of the late GDR, vanished with reunification. After almost all social activities were abandoned, and after labour on the farm was substituted on a large scale by capital, we now find a production system in East German agriculture that has been labelled "fordism" around 100 years ago (Gramsci, 1971): A fully rationalised system, which has maximum efficiency from a farm management point of view (Land, 2000; Land and Willisch, 2002).

Agriculture in Switzerland is not only, since many centuries, characterised by farm families. Agriculture is also the social foundation for Switzerland as a state: It were farmers who founded the state by their common oath on the Rütli mountain. The experience of the isolated position during the world wars of the 20<sup>th</sup> century increased the consciousness of

how important domestic farm production was. Hence, Switzerland's agriculture shows one of the highest PSE's worldwide since decades. This, again, has led to a relatively low pressure on farms and, as a result, to the described small-scale structure. This is an explanation why we find in Switzerland an extreme example for the dominant Western European agricultural system that is defined by the unity of family, household and farm (Schmitt, 1999, Rossier, 2001).

The term 'agricultural system' is most often used for agricultural production in developing countries (Collinson, 2000). But the described differences show that the distinction is a systematic, not a gradual one, extending from economic to social dimensions. Therefore the term 'system' seems to be adequate for our comparison.

### 3. A hypothesis about the role of the agricultural system in depopulation processes

While depopulation processes have been explained by social (Kiang, 1975) and demographic (Heleniak, 1999) factors, by low household incomes (Beale, 1977; Domazlicky, 2002), changing patterns of demand (Whelan, 1999) or an over-specialization of regions (Simard, 1998), this paper focuses on the different role of economic sectors in rural areas. The following hypothesis is to be tested with respect to the different agricultural systems: Agriculture in systems based on farming families can, relative to their economic strength, contribute above average to prevent or slow down depopulation processes. Farms in fordistic production systems, however, are not able to contribute positively to population development.

This hypothesis is explained by the following observations:

- Households of farming families are usually organised in a rather traditional way (Rossier, 2001), including a higher number of children (Harsche, 1999). For Switzerland, a recent survey among farm households revealed an average of 2.7 children per woman, while the Swiss total average is just 1.4 children per woman. In fordistic systems where there are no farming families in the traditional sense but rather employers and employees in large agricultural firms, these peculiarities will vanish.
- Local interdependencies with other economic actors in the region may be another important factor. A farm generates addition added value for the region if it buys feed and seeds as well as goods for the farm household in the community. Table 1 cites a study based on Social Accountancy matrices which shows the value generation of one monetary unit put into any local sector of a Swiss mountain valley. Agriculture has, behind tourism, the highest local multiplier. A similar analysis for an agricultural enterprise in Mecklenburg-Western Pomerania could not be published because none of such interdependencies could be discovered: All production factors were purchased outside the community and even the labourers employed came from other regions.

Tab.1: Demand multipliers in Val Bregaglia (BUSER et al., 2002)

Sector	Multiplier
Agriculture	1.193
Food industry	1.065
Other industry	1.139
Construction	1.121
Service	1.017
Electricity	1.025
Tourism	1.225

Public Sector	1.046
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- In times of increasing mobility, family farms still use to live where they work. This simple fact which is supported by a typically strong link between the farmer and the village community, enhances an even distribution of settlement. In fordist agricultural systems, however, we do not only have fewer workers per hectare, but also commuting staff. There is even a considerable number of farms, particularly in crop production, that is managed from abroad with few on-farm operations per year.
- Last but not least, a peasant lifestyle may have something fascinating for some persons (Berg et al., 1993). It has been shown that the crime rate is negatively correlated with farms per village, from which some conclusions about the special lifestyle have been drawn. It is obvious that these differences vanish if the production model of agriculture is adapted to an industrial mode of production.

The hypothesis to the different role of agriculture in depopulation processes is to be tested by quantitative analysis throughout the following sections.

#### 4. Quantitative Test

The focus of our study is on the development of population figures in rural municipalities. Thus, the dependant variable is the relative population development of municipalities with a population density below 150 persons per square kilometre between 1990 and 2000. By choosing this criterion, the OECD-definition of the countryside has admittedly been simplified (Schrader, 1997), but this was due to data availability. From Swiss and Mecklenburg-Western Pomeranian municipalities, a random sample was drawn, again because of data availability restrictions.

Tab. 2: Explaining variables used

Variable	Meaning
Empl1	Share of persons employed in primary sector relative to employable residents
Empl2	Share of persons employed in secondary sector relative to employable residents
Empl3	Share of persons employed in tertiary sector relative to employable residents
Unemp	Share of unemployed persons relative to employable residents
Young	Share of persons under 20 years (1990) relative to employable residents
Old	Share of persons over 65 years (1990) relative to employable residents
Rich	Wealth of residents, measured by total tax base (MWP) or the Federal tax base (Switzerland)

Table 2 summarizes by which factors the change in the number of residents was explained by Ordinary Least Square calculations. In order to test the formulated hypothesis, the effect of the different share of the economic sectors in the municipalities had to be tested. The jobs in the respective sectors relative to the number of persons between 20 and 65 years were used as variables. Because also the unemployment was expected to have a considerable effect on migration decisions, the share of unemployed persons relative to employable persons was also used as variable. Another variable supposed to influence population development was the demographic structure of the municipality, particularly the share of young and old persons. Already confirmed by the literature (Domazlicky, 2002) was the

influence of the level of wealth of the municipality on population development. The level of wealth of residents was measured by different tax indicators. As tax rates of municipalities are different in Switzerland, only the revenue of the uniform federal tax rate was taken into account. In Mecklenburg-Western Pomerania, a uniform tax rate makes calculations easier. However, statistics do not tell us whether taxes come from natural persons or legal entities, so that the total income tax per head has to serve as an indicator for wealth.

Altogether, data availability has been a main obstacle for explaining population development, particularly in Mecklenburg-Western Pomerania. From Swiss studies (Mann, 2004), we know that the number of enterprises is a better explaining variable than the number of jobs. We know that commuting options are a key factor in explaining population development and we know about the importance of indicators like the number of second homes which serve as a proxy for the touristic attractiveness of a municipality. But all these variables are unavailable in Mecklenburg-Western Pomerania's statistical office. In order to guarantee comparability, we do not use these variables for Switzerland, either.

Other variables which are available, may correlate with population development, but it is not clear what is the cause and what the effect. Municipalities with a male surplus are often municipalities with a loss of population. But a surplus of men is not necessarily the cause of depopulation (eg. reason for outmigration of men), but also possibly their result (n<sup>h</sup>higher mobility of women who are the first leaving the municipality).

## 5. Results

The results of the two regressions are summarized in Table 3.

First of all, the hypothesis developed and explained in Section 3 can be confirmed. A higher share of employees in Switzerland's farming sector leads in general to increasing population or to decreasing depopulation. In the agricultural system of Mecklenburg-Western Pomerania, this connection seems to turn around: A high share of farm workers rather enhances depopulation. The fundamental differences of agricultural systems apparently leads to a fundamentally different impact on population development. On the other hand, the two other sectors do not influence population development significantly.

Tab. 3: Results of the regressions

Variable	Switzerland (n=1646)	Mecklenburg-W. Pomerania (n=468)
Empl1	0.114** (2.68)	-0.0045* (-2.17)
Empl2	-0.062 (-1.19)	-0.0007 (-0.62)
Empl3	0.061 (1.26)	-0.0012 (-0.98)
Unemp	3.36** (8.76)	-1.43** (-5.59)
Young	-0.415** (-4.71)	-0.127 (-0.216)
Old	-0.566** (-7.45)	-4.07** (-8.09)
Rich	0.00001 (1.01)	-0.00000 (-0.071)
R <sup>2</sup>	0.09	0.28

t-values in parentheses. \* - Error probability <5%; \*\* - Error probability <1%

Apparently, not only the agricultural system influences population development in a different way, but also the phenomenon of unemployment. The effect of unemployment in Mecklenburg-Western Pomerania is intuitively capable. Unemployment rates between 15 and 20 per cent mirror the phenomenon of structural unemployment. Particularly the pressure to leave the community is stronger where structural unemployment is high, and also the birth rate will be negatively affected by unemployment. In Swiss municipalities where unemployment is hardly ever above five per cent, we usually deal with frictional, sometimes with cyclical unemployment. In these municipalities, the core question seems to be whether

the ones concerned by short-term unemployment will leave their municipalities and look for work in other regions or whether they are confident enough to stay. In the first case, unemployment figures will be low and population development negative, in the latter case vice versa. Thus, unemployment can positively correlate with a stable population development.

A high share of old people as well as a high share of young people can cause problems for sparsely populated regions. The effect of old people can easily be explained by this group's high mortality. Probably due to the extremely low birth rate, the share of old people is particularly important in Mecklenburg-Western Pomerania. The negative impact of young people which is significant in Switzerland can probably be explained by the high mobility in the phase after schooling which leads to a high outmigration at this stage. Following qualitative results on outmigration in East Germany (Schmidt and Willis, 2003), it is well possible that the variable would also be significant for Mecklenburg-Western Pomerania if we had taken the age group between 20 and 30.

While the used indicators for welfare have not led to a statistically measurable connection, we should last but not least focus on the different measure of determination, as they may point to wealth related differences. Basically, the statement by Hodge and Whitby (1986) that the quantitative analysis of rural policy issues is very limited because of the importance of soft factors is still valid. Qualitatively, changes in population are also explained with factors like lifestyle (Walmsley et al., 1998) or landscape (Paquette and Domon, 2003). Considering the fact that a lot of important hard factors like jobs in the adjacent municipalities had to be neglected for reasons of lack of data, the measure of determination in Mecklenburg-Western Pomerania, covering 28 per cent of variance, is rather high. It is almost three times as high as the statistically explained share in Switzerland. It may be that the different wealth levels reveal themselves in this way: Migration decisions and decisions around family planning may in the poor region of Mecklenburg Western Pomerania be influenced by economic necessities to a stronger degree than in Switzerland, where personal preferences may play a more important role. If this thesis is correct, it means that carrying out rural policies by economic means becomes more difficult with increasing wealth.

## **6. Implications for rural policy**

While the interpretation of most variables and their influence on population development is rather suitable for sociologists or geographers than for agricultural economists, the connection shown provokes some afterthoughts about the connection between agriculture and rural policy. In order to integrate them into the agricultural policy discussion, a brief overview about the discussion about agricultural structures carried out during recent decades is useful.

While Thier's standpoint that "agriculture is a business to make money, as any other business" (cited from Steding, 1959, translation S.M.) today sounds like a boring mainstream statement, it certainly was not in the 19<sup>th</sup> century when Thier lived. What we know about German fascist ideology with respect to farming did not arise in 1933, nor did it disappear in 1945. Assigning an intrinsic value to farming has, for a long time, been a continuous process in the agricultural history Germany and, in fact, many other parts of Europe.

In a journal which still represents one of the most important agricultural outlets of today's Germany, Steding (1959) asks: "Do we have a steady German attitude towards the sociological, cultural and other non-economic achievements of the farmer for the nation, which are often cited but rarely defined?" and gives an answer several pages later: "The farmer as citizen, as family father, as carrier of culture, custom and tradition, as an individual who loves ownership and freedom; the farming family as educational and living community,

life on a farm as a stabilising counterpoint against mass movements are subjects with real relevance for agricultural policy." Such statements are not unique to post-fascism Germany, as show a citation of the honoured Swiss agricultural economist Laur (1959): Rural small farms are the root of the family (...). From their childhood, the youngsters are educated to work and help on the farm. The industry draws their best workers from farms; they are the source of a peoples' spirit."

Langbehn can rightly state as late as 1989: "The rural family farm has, in the CAP, been the unquestioned model with respect to agricultural structures." But already at this time has the model lost its ideological foundation of a special, almost intrinsic value of the family farm. Hence, for Germany this model disappears with the challenge to integrate a very different agricultural system into the country. The model switches towards liberalism, and nobody dissents with Kromka in 1990, when he argues against "reactionary, rousseauist thoughts" favouring a special role of agriculture in the market economy: "They activate the old, primitive feelings, which we have acquired during hundreds of thousands of years in the small groups in which humans have developed."

Indeed, since some time it has almost become impossible to find a structural model in the mainstream agricultural policy discussion which goes beyond demanding sustainability and economic profitability. The family farm has lost its intrinsic value. This may be good: It is a paradigm change compared to the ideological past and it is the only possibility to accept Eastern and Western path dependencies at the same time. But it is no reason for postmodern randomness. The empirical study in the sections above shows that different production systems have a different impact on the socio-economic environment.

While the thought that certain agricultural systems had an intrinsic value are outworn, there should be room for the impression that certain political targets can be achieved in certain agricultural systems through lower costs than in others. For a policy to keep population in rural areas, there are indications that a small-structured farming system supports this objective. Hence, the family farm has no more intrinsic value, but an instrumental one.

This is an argument for a regionally differentiated agricultural policy, not only within the CAP, but also by a suitable land law and other regional policy instruments. One should distinguish between urbanized rural regions struggling with over-population where there is no reason to support small farm structures and regions struck by severe depopulation processes where there may be one.

Usually, historical processes are irreversible. A traditional agricultural system based on small family farms will not be an option for Eastern Europe, and it probably would not be desirable, either. But it should be considered to support farm structures in rural problem regions where added value per hectare is high and interdependencies with other local actors is strong.

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